

April 2007

# DEFENSE INVENTORY

## Opportunities Exist to Save Billions by Reducing Air Force's Unneeded Spare Parts Inventory



G A O

Accountability \* Integrity \* Reliability

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## Why GAO Did This Study

At a time when U.S. military forces and their equipment are in high demand, effective management of the Department of Defense's (DOD) inventory is critical to ensure that the warfighter has the right items at the right time. The Air Force is the largest contributor to DOD's total on-hand inventory on the basis of inventory value. Under the statutory authority of the Comptroller General to conduct evaluations on his own initiative, GAO determined the extent to which (1) the Air Force's on-order and on-hand inventory reflect the amount of inventory needed to support required inventory levels from fiscal years 2002 through 2005, and (2) the Air Force had shortages in its inventory needed to support required levels during this period. To address these objectives GAO analyzed Air Force secondary inventory data (spare parts such as engines and guided missiles) from fiscal years 2002 through 2005.

## What GAO Recommends

GAO recommends that the Air Force take four specific actions to strengthen the accountability and improve the management of its secondary inventory. DOD generally concurred with our recommendations. However, we do not believe DOD's planned actions fully respond to two of the recommendations in our report.

[www.gao.gov/cgi-bin/getrpt?GAO-07-232](http://www.gao.gov/cgi-bin/getrpt?GAO-07-232).

To view the full product, including the scope and methodology, click on the link above. For more information, contact William M. Solis at (202) 512-8365 or [solisw@gao.gov](mailto:solisw@gao.gov).

# DEFENSE INVENTORY

## Opportunities Exist to Save Billions by Reducing Air Force's Unneeded Spare Parts Inventory

### What GAO Found

More than half of the Air Force's secondary inventory (spare parts), worth an average of \$31.4 billion, was not needed to support required on-hand and on-order inventory levels from fiscal years 2002 through 2005, although increased demand due to ongoing military operations contributed to slight reductions in the percentage of inventory on hand and the number of years of supply it represents. DOD regulations provide guidance for developing materiel requirements based on customer expectations while minimizing inventories. However, the value of Air Force on-order inventory not needed to support required inventory levels increased by about 7.8 percent, representing an average of 52 percent (\$1.3 billion) of its on-order inventory. The Air Force has continued to purchase unneeded on-order inventory because its policies do not provide incentives to reduce the amount of inventory on order that is not needed to support requirements. When the Air Force buys these items it may obligate funds unnecessarily, which could lead to not having sufficient obligation authority to purchase needed items and could negatively impact readiness. In addition, although the percentage of the Air Force on-hand inventory was reduced by 2.7 percent due to increases in demand, about 65 percent (\$18.7 billion) of this inventory was not needed to support required inventory levels. GAO calculated that it costs the Air Force from \$15 million to \$30 million annually to store its unneeded items. Of the Air Force's inventory items not needed to support required inventory levels, 79 percent had no recurring demands (such as engines and airframe components), resulting in a potentially infinite supply of those items. The Air Force has continued to retain this unneeded inventory with no recurring demands, in part, because the Air Force has not performed a comprehensive assessment to revalidate the need to continue to retain these items. For the remaining 21 percent of items that had recurring demands, increasing demands resulted in a reduction in the number of years of supply that this inventory represents, with the largest quantity and value of items having between 2 to 10 years of supply. Inventory not needed to support required inventory levels can be attributed to many long-standing problems, such as decreasing demands, retaining items used to support aging weapon systems that have diminishing sources of supply or are being phased out of service, and not terminating contracts for on-order items. Air Force officials acknowledged that decreases in demand have resulted in having more inventory than is needed; however, the Air Force has not evaluated why it continues to experience decreases in demand or taken actions to mitigate the effect of these changes. Without taking actions to reduce its unneeded inventory, the Air Force will continue its past practices of purchasing and retaining items it does not need and then spending additional resources to handle and store these items.

Although more than half of its secondary inventory was not needed to support required levels, the Air Force still had shortages of certain items. From fiscal years 2002 through 2005, the percentage and value of the Air Force's inventory shortages remained the same at about 8 percent and \$1.2 billion.

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## Abbreviations

DLA Defense Logistics Agency  
DOD Department of Defense

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United States Government Accountability Office  
Washington, DC 20548

April 27, 2007

#### Congressional Committees

Each of the military services and the Defense Logistics Agency (DLA) maintain a supply of secondary inventory<sup>1</sup> of spare parts to keep military equipment operating for its missions. At a time when U.S. military forces and their equipment are in high demand, the effectiveness and efficiency of the Department of Defense's (DOD) inventory management is critical to ensure that the warfighter is supplied with the right items at the right time. Because the services and DLA face challenges in competing for available resources at a time when the nation faces an increasingly fiscally constrained environment, it is imperative that they have good stewardship over the billions of dollars invested in their inventory.

Since 1990, we have identified the department's management of its secondary inventory as a high-risk area due to ineffective and inefficient inventory management systems and procedures and high levels of inventory not needed to support required inventory levels (hereafter referred to as requirements). These high levels of inventory include both on-hand and on-order inventory. Inventory that is in DOD's possession is considered to be on hand. Inventory that is not in DOD's possession but for which contracts have been awarded or funds have been committed is considered to be on order. DOD has reduced the overall value of its secondary inventory—from more than \$100 billion in 1990 to about \$67 billion as of September 30, 2002. However, in recent years the trend has been reversed due to increases in the value and quantity and changes in the mix of items in DOD inventory, with inventory values increasing to about \$80 billion as of September 30, 2005, which is a 19 percent increase from September 30, 2002, to September 30, 2005.<sup>2</sup> Nevertheless, the department continues to attribute readiness problems in part to shortages of spare parts.

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<sup>1</sup>Secondary inventory items include repairable components, subsystems, and assemblies other than major end items (e.g., ships, tanks, aircraft, and helicopters), consumable repair parts, bulk items and materiel, subsistence, and expendable end items, including clothing and other personal gear.

<sup>2</sup>At the start of our review, the most recent inventory data available from DOD were through the end of fiscal year 2005.

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We have previously reported on many long-standing and systemic problems in DOD's inventory management, which affect all of the military services and DLA.<sup>3</sup> Given the significant resources invested in DOD's inventory and the long-standing problems in the management of DOD's spare parts, we reviewed the Air Force's secondary inventory because the Air Force is the largest contributor to DOD's total on-hand inventory on the basis of inventory value. The Air Force represents an average of about 39 percent (\$28.9 billion) of the value of DOD's total on-hand inventory. In our previous reports, we identified the Air Force as having large amounts of inventory on order and on hand that was not needed to support its requirements.

Because of the broad congressional interest in DOD's high-risk areas, we prepared this report under the Comptroller General's authority to conduct evaluations on his own initiative. We are providing it to you because of your oversight responsibilities for defense issues. Our objectives for this report were to determine the extent to which (1) the Air Force's on-order and on-hand secondary inventory reflects the amount of inventory needed to support requirements from fiscal years 2002 through 2005, and (2) the Air Force had shortages in its inventory needed to support requirements from fiscal years 2002 through 2005. We plan to report on the management of the Army, Navy, and DLA secondary inventory separately. In addition, in March 2007, we reported that inaccurate forecasting of DOD's acquisition lead times for spare parts has led to early delivery of items, resulting in additional inventory on hand that is not needed to support requirements.<sup>4</sup>

To determine the extent to which the Air Force's on-order and on-hand secondary inventory reflects the amount of inventory needed to support requirements or was not enough to support requirements, we analyzed summary and item-specific inventory data from fiscal years 2002 through 2005 to determine the total value of items that had more than or less than enough inventory to satisfy their respective requirements. To determine

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<sup>3</sup>GAO, *Defense Inventory: Much of the Inventory Exceed Current Needs*, [GAO/NSIAD-97-71](#) (Washington, D.C.: Feb. 28, 1997); *High-Risk Series: Defense Inventory Management*, [GAO/HR-97-5](#) (Washington, D.C.: February 1997); *Overall Inventory and Requirements Are Increasing, but Some Reductions in Navy Requirements Are Possible*, [GAO-03-355](#) (Washington, D.C.: May 8, 2003); *High-Risk Series: An Update*, [GAO-05-207](#) (Washington, D.C.: January 2005); and *High-Risk Series: An Update*, [GAO-07-310](#) (Washington, D.C.: Jan. 31, 2007).

<sup>4</sup>GAO, *Defense Inventory: Opportunities Exist to Improve the Management of DOD's Acquisition Lead Times for Spare Parts*, [GAO-07-281](#) (Washington, D.C.: Mar. 2, 2007).

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the reasons for having inventory not needed to support requirements or inventory shortages, we conducted a survey of some inventory items selected from the 18,676 unique Air Force items that met our selection criteria—10,810 unique items with inventory not needed to support requirements and 7,866 unique items with inventory shortages. We selected a probability sample of 335 unique Air Force inventory items—230 unique items with inventory not needed to support requirements and 105 unique items with inventory shortages. Because this was a random probability sample, the results of our analysis can be projected to all Air Force items that met our selection criteria. We sent surveys to Air Force item management specialists who had responsibility for the selected unique inventory items to identify the frequency of reasons for items not needed to support requirements or not meeting inventory requirements. We received survey responses for 295 of the 335 unique items in our sample.

On the basis of information obtained from the Air Force on the reliability of their inventory management systems' data, the survey results, and our follow-up analyses, we believe that the data used in this report are sufficiently reliable for our purposes. We conducted our review from January 2006 through February 2007 in accordance with generally accepted government auditing standards. Details of our scope and methodology are included in appendix I.

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## Results in Brief

More than half of the Air Force's secondary inventory, worth an average of \$31.4 billion, was not needed to support on-order and on-hand requirements from fiscal years 2002 through 2005, although increases in the demand for items due to ongoing military operations has contributed to a slight reduction in the percentage of this on-hand inventory and the number of years of supply the inventory represents. The Air Force's on-order inventory not needed to support its requirements increased by 7.8 percent (\$0.3 billion) over this 4-year period. DOD's regulations provide guidance for developing materiel requirements based on customer expectations while minimizing inventories. However, an average of 52 percent (\$1.3 billion) of the Air Force's secondary on-order inventory was not needed to support on-order requirements from the end of fiscal year 2002 through the end of fiscal year 2005. This \$1.3 billion in unneeded on-order inventory indicates that the Air Force did not cancel orders or deobligate funds for items that were not needed to support requirements. The Air Force has continued to purchase this unneeded on-order inventory because its policies do not provide incentives (such as requiring contract termination review for all unneeded on-order inventory and reducing the



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amount of funds available for the Air Force Materiel Command to obligate for unneeded inventory items) to reduce the amount of inventory on order that is not needed to support requirements. In addition, as a result of increased demand associated with ongoing military operations, the percentage of the Air Force's on-hand inventory not needed to support requirements was reduced by 2.7 percent from the end of fiscal year 2002 through the end of fiscal year 2005, but the value of this inventory remained the same. Despite this slight reduction, about 65 percent (\$18.7 billion) of the Air Force's secondary on-hand inventory was not needed. As a result, we calculated that it costs the Air Force \$15 million annually to store useable items not needed to support on-hand requirements and up to an additional \$15 million annually for repairable broken items, depending on the location where these items are stored. Moreover, the \$18.7 billion in unneeded on-hand inventory indicates that the Air Force may not have canceled orders for items that were not needed or may have tied up funds that could have been obligated for other needs. Of the Air Force's inventory items not needed to support requirements, 79 percent had no recurring demands at all, resulting in a potentially infinite supply of those items. The Air Force has continued to retain this unneeded inventory with no recurring demands, in part, because the Air Force has not performed a comprehensive assessment of its on-hand inventory items that are not needed to support requirements and that have no recurring demands to revalidate the need to continue to retain these items. For the remaining 21 percent of items that had recurring demands, we found that increasing demands resulted in a reduction in the number of years of supply that this inventory represents, with the largest quantity and value of items having between 2 to 10 years of supply. Based on our sample, we found that the Air Force's secondary inventory not needed to support on-order and on-hand requirements can be attributed to many of the long-standing and systemic inventory management problems that we have identified in our prior reports,<sup>5</sup> such as decreasing demands or demands not materializing at all, retaining items used to support aging weapon systems that have diminishing sources of supply or are being phased out of service, retaining items that may be used to support new weapon systems, and not terminating eligible contracts for on-order items. For example, Air Force item management specialists indicated that decreasing demands or demands not materializing at all were the major factors for having

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<sup>5</sup>GAO, *Defense Inventory: Much of the Inventory Exceed Current Needs*, [GAO/NSIAD-97-71](#) (Washington, D.C.: Feb. 28, 1997); *Defense Inventory: Process for Canceling Inventory Orders Needs Improvement*, [GAO/NSIAD-00-160](#) (Washington, D.C.: June 30, 2000).

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inventory on order and on hand that was not needed to support current operations. Air Force officials acknowledged that they are aware that decreases in demands have resulted in having more inventory than is needed to support requirements; however, the Air Force has not evaluated why they continue to experience these decreases in demands or taken actions to mitigate the effect of these changes. Without taking actions to reduce the amount of inventory that is not needed to support requirements, the Air Force will continue its past practices of purchasing and retaining items that it does not need and then spending additional resources to handle and store these items.

Although more than half of its secondary inventory was not needed to support requirements, the Air Force still had shortages of certain items in its inventory. We found that the percentage and value of the Air Force's inventory shortages from fiscal years 2002 through 2005 remained the same, at about 8 percent and \$1.2 billion of its inventory required. Some of the reasons reported by Air Force item management specialists for the inventory shortages were an increase in the demand for the items, plans to upgrade the systems the items support, plans to replace the items, and lost or delayed repair capability for the items.

We are recommending that the Secretary of Defense direct the Secretary of the Air Force to (1) modify its policies to provide incentives to reduce purchases of on-order inventory that are not needed to support requirements, such as requiring contract termination review for all unneeded on-order inventory or reducing the funding available for the Air Force Materiel Command by an amount up to the value of the Air Force's on-order inventory that is not needed to support requirements; (2) conduct a comprehensive assessment of the inventory items on hand that are not needed to support requirements and that have no recurring demands and revalidate the need to continue to retain these items; (3) evaluate why it continually experiences decreases in demands that result in having more than half of its inventory on hand than is needed to satisfy its requirements, and (4) determine what actions are needed and then take steps to address these changes in demand.

In written comments on a draft of this report, DOD generally concurred with our recommendations. DOD cited specific actions it plans to take to implement the four recommendations and specified implementation timelines for each recommendation. In response to two recommendations, DOD's planned actions did not fully respond to our recommendations. For example, DOD partially concurred with our recommendation to modify its policies to provide incentives to reduce purchases of on-order inventory

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that are not needed to support requirements. DOD said that the Air Force plans to address this issue by enforcing existing policy and by placing an increased focus on excess on-order measures. DOD did not agree that a change or modification to the Air Force's policy was required to accomplish this task, as we recommended. In June 2006, the Air Force revised its contraction termination policy to require review of fewer on-order inventory items for potential contract termination. We believe that this new policy will exacerbate the problem of having more inventory than is needed to support current requirements. Thus, we continue to believe that the Air Force needs to modify its current policy to provide incentives to reduce purchases of on-order inventory. Additionally, DOD concurred with our second recommendation to conduct a comprehensive assessment of unneeded on-hand inventory. DOD stated that the Air Force will review its current stockage retention policy and take actions necessary to reduce the inventory as required. DOD also stated that the Air Force will conduct annual reviews of all inventory items as is directed by DOD's Supply Chain Management policy. While we believe that DOD's planned actions are a step in the right direction, added scrutiny should be applied to the Air Force's review of its stockage retention policy to ensure that it is not retaining assets that are not needed to support current and future operational needs. Furthermore, unless and until the Air Force makes appropriate adjustments to its inventory retention levels, there are no assurances that significant improvements will be made to reduce the Air Force's on-hand inventory not needed to support requirements. Finally, DOD did not address the portion of this recommendation directing the Air Force to consider establishing requirements for items that support weapon systems that have lengthy projected life spans. DOD's comments and our evaluation of them are discussed in the "Agency Comments and Our Evaluation" section of this report.

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## Background

Inventory management and oversight for the Air Force is a shared responsibility between the Offices of the Secretary of Defense and the Secretary of the Air Force. The Under Secretary of Defense for Acquisition, Technology, and Logistics is responsible for developing and ensuring the uniform implementation of DOD inventory management policies throughout the department, monitoring the overall effectiveness and efficiency of the DOD logistics system, and continually developing improvements. The Secretary of the Air Force is responsible for implementing DOD inventory policies and procedures. The Air Force Materiel Command has issued a manual to its air logistics centers—Ogden Air Logistics Center, Oklahoma City Air Logistics Center, and Warner

Robins Air Logistics Center—that prescribes guidance and procedural instructions for computing requirements for its secondary inventory.

To assist in the management of its inventory, DOD summarizes its secondary inventory in its annual Supply System Inventory Report. This report is based on financial inventory and other inventory reports prepared by the military services and DLA. The report summarizes inventories by DOD component and inventory category. Over the past 4 years, DOD has reported a continuous increase in the value of its secondary item inventory in its Supply System Inventory Report. As of September 30, 2002, DOD reported that its secondary inventory was valued at about \$67.0 billion; however, as of September 30, 2005, the value of this inventory had increased to about \$79.6 billion—a \$12.6 billion increase between 2002 and 2005. Table 1 shows the value of DOD’s on-hand inventory from fiscal year 2002 through fiscal year 2005 and the value and percentage of the inventory held by the Air Force.

**Table 1: Value of DOD’s On-Hand Inventory and the Value and Percentage Represented by the Air Force**

Dollars in billions			
Fiscal year	Reported value of DOD’s on-hand inventory	Value of Air Force’s on-hand inventory	Percent of DOD’s on-hand inventory held by the Air Force
2005	\$79.6	\$29.4	36.9%
2004	78.1	30.2	38.7
2003	70.6	27.9	39.5
2002	67.0	28.2	42.1

Source: GAO analysis of DOD data.

From fiscal year 2002 through fiscal year 2005, the Air Force’s total on-hand inventory increased by \$1.2 billion, representing about 10 percent of the total \$12.6 billion increase in DOD inventory during this period. This increase was primarily due to the addition of new items to the Air Force’s inventory in fiscal year 2005. Specifically, from September 30, 2002, through September 30, 2005, the Air Force added 2,331 new unique items with a total of about 179,425 individual parts that were valued at

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approximately \$1.3 billion.<sup>6</sup> Our analysis shows that increases in the Air Force's inventory were also caused by changes in the value and quantity of the unique items in the inventory. We found that changes in the price of items in the Air Force's secondary inventory resulted in a \$0.8 billion increase in the value of its inventory in fiscal year 2005. Similarly, changes in the quantity of secondary inventory unique items that were on hand in fiscal year 2002 were the reason for a \$0.7 billion increase in the value of DOD's secondary inventory in fiscal year 2005. These price increases were offset by a decrease of \$1.6 billion in the value of the Air Force's inventory for items that were included in fiscal year 2002 but were not included in the inventory for fiscal year 2005.

The Air Force uses a process called requirements determination to calculate the amount of inventory that is needed to be held in storage (on hand) and that should be purchased (on order). This information is used to develop the Air Force's budget stratification report. The stratification report shows the amount of inventory needed to meet operating requirements. When the total of on-hand and on-order inventory falls to or below a certain level—called the reorder point—inventory managers place orders for additional inventory to prevent out-of-stock situations from occurring. The Air Force refers to its inventory managers as item management specialists. Generally, item management specialists order the amount of inventory needed to satisfy the reorder point requirement. Depending on the item, the reorder point may include requirements for one or more of the following:

- war reserves that are authorized to be purchased,
- customer-requisitioned materiel that has not been shipped (also known as stock due-outs),
- a safety level to be on hand in case of minor interruptions in the resupply process or unpredictable fluctuations in demand,
- minimum quantities for essential items for which demand is not normally predicted (also referred to as numeric stockage objective or insurance items),
- inventory to satisfy demands while broken items are being repaired (also referred to as repair cycle stock),

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<sup>6</sup>The Air Force secondary inventory data are identified by unique stock numbers for each spare part, such as an engine for a particular aircraft, which we refer to as unique items. The Air Force may have in its inventory multiple quantities of each unique item, which we refer to as individual parts.

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- inventory to satisfy demands during the period between when the need to replenish an item through a purchase is identified and when a contract is awarded (also referred to as administrative lead time), and
  - inventory to satisfy demands during the period between when a contract for inventory is awarded and when the inventory is received (also referred to as production lead time).

We define the Air Force's current year's operating requirements as requirements for war reserves, stock due-outs (backorders), safety levels, numeric stockage objective (a form of safety stock), and repair cycle. Hereafter, these requirements will be referred to as on-hand requirements. On-hand inventory is used to satisfy these on-hand requirements. On-order inventory is the amount of inventory for which contracts have been awarded or funds have been committed by the Air Force to satisfy any shortfall to its on-hand requirements and its administrative and production lead time requirements. Hereafter, these requirements will be referred to as on-order requirements. When there is not enough inventory to meet on-hand and on-order requirements, this is defined as an inventory shortage.

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## More than Half of the Air Force's Secondary Inventory Was Not Needed to Support Requirements, Although Demand for Some Items Increased

More than half of the Air Force's on-order and on-hand secondary inventory, worth an average of \$31.4 billion, was not needed to support its requirements from fiscal years 2002 through 2005, although increases in demand have contributed to a slight reduction in the percentage of this on-hand inventory and a reduction in the number of years of supply this inventory represents. Our analysis shows that the value and the percentage of the Air Force's inventory not needed to support its on-order requirements increased by about \$0.3 billion and 7.8 percent, respectively, representing an average of 52 percent of its on-order inventory. Additionally, we found that the percentage of the Air Force's inventory not needed to support its on-hand requirements was reduced by 2.7 percent, due, in part, to increases in the demand for the items. However, this inventory represents an average of about 65 percent (about \$18.7 billion) of the value of unneeded on-hand inventory. While increasing demands have resulted in the Air Force reducing the number of years of supply this inventory represents, 79 percent of the Air Force's inventory items not needed to support requirements had no recurring demands at all, resulting in a potentially infinite supply of those items. We found that the Air Force's secondary inventory not needed to support on-order and on-hand requirements can be attributed to many of the long-standing and systemic inventory management problems that we have identified in our prior

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reports in 1997 and 2000,<sup>7</sup> such as decreasing demands or demands not materializing at all, retaining items used to support aging weapon systems that have diminishing sources of supply or are being phased out of service, retaining items that may be used to support new weapon systems, and not terminating eligible contracts for on-order items.

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### Air Force On-Order Inventory Not Needed to Support Requirements Has Increased

Based on our analyses, we found that the Air Force experienced an increase in the amount and percentage of on-order inventory not needed to support its on-order requirements from the end of fiscal year 2002 through the end of fiscal year 2005. The value and percentage of the Air Force's unneeded on-order inventory increased by about \$0.3 billion and 7.8 percent, respectively. Although DOD's supply chain management regulation<sup>8</sup> provides guidance for developing materiel requirements based on customer expectations while minimizing inventories, over the 4-year period an average of 52 percent (\$1.3 billion) of the Air Force's on-order inventory was not needed. Examples of unneeded on-order inventory include jet engines, landing gear components, electrical and communication equipment, guided missile components, aircraft hydraulic and de-icing system components, and other aircraft components. This \$1.3 billion in on-order inventory not needed to support requirements indicates that the Air Force did not cancel orders or deobligate funds for items that were not needed to support requirements. Furthermore, based on the Air Force's fiscal year 2005 stratification report, the Air Force marked for disposal approximately \$300 million of its on-order inventory that is not needed to support requirements. This means that as soon as these on-order items are delivered, they could be disposed of. Table 2 shows the amount of unneeded inventory the Air Force had on order at the end of fiscal year 2002 through the end of fiscal year 2005.

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<sup>7</sup>GAO, *Defense Logistics: Much of the Inventory Exceed Current Needs*, [GAO/NSIAD-97-71](#) (Washington, D.C.: Feb. 28, 1997); *Defense Inventory: Process for Canceling Inventory Orders Needs Improvement*, [GAO/NSIAD-00-160](#) (Washington, D.C.: June 30, 2000).

<sup>8</sup>Office of the Deputy Under Secretary of Defense for Logistics and Materiel Readiness, *Department of Defense Supply Chain Materiel Management Regulation*, DOD 4140.1-R (May 23, 2003).

**Table 2: Air Force On-Order Secondary Inventory Not Needed to Support Requirements from End of Fiscal Year 2002 through End of Fiscal Year 2005**

Dollars in billions				
Fiscal year	Total value of on-order inventory	Inventory not needed to support requirements		
		Number of items	Value	Percent of on-order inventory
2005	\$2.3	788,515	\$1.1	47.8%
2004	3.0	1,249,204	1.8	60.0
2003	2.7	743,504	1.5	55.6
2002	2.0	792,419	0.8	40.0

Source: GAO analysis of Air Force data.

At the end of fiscal year 2005, the Air Force had 2,157 unique items (with a quantity of 788,515 individual parts) valued at \$1.1 billion with inventory on order that was not needed to support requirements. Of these 2,157 items, there were 1,192 unique items (with a quantity of 723,147 individual parts) that had unneeded inventory both on order and on hand. These items represented approximately 74 percent, or about \$0.8 billion of the total \$1.1 billion of Air Force's on-order items that were not needed to support requirements. Appendix II contains a list of the top 10 types of items, identified by the federal supply class, with the highest value of unneeded items on order as of September 30, 2005.

The Air Force has not been effective in reducing the amount of its unneeded inventory on order, with an average of \$1.3 billion of its on-order inventory over the past 4 years not being needed to support requirements. The Air Force has continued to purchase this unneeded on-order inventory because its policies do not provide incentives to reduce the amount of inventory on order that is not needed to support requirements. Instead, the Air Force has revised its policies to make it easier to purchase inventory that is not needed to support requirements. For example, in June 2006 the Air Force Materiel Command announced a change in its policy for reviewing contract termination actions valued at \$1 million or less to require each air logistics center to review at least 80 percent of the center's total computed termination value, with priority given to those terminations with the highest dollar value.<sup>9</sup> Under its prior policy, all such orders were required to be reviewed for potential contract

<sup>9</sup> Air Force Materiel Command, *Secondary Item Requirements System (SIRS) Policy Memo #2006-05* (June 7, 2006).



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termination. We did not evaluate this new policy to determine the overall impact that it would have on purchasing items not needed to support requirements because this policy was not in effect during our review period, but it appears that this new policy will exacerbate the problem. Until the Air Force policy provides incentives, such as requiring contract termination review for all unneeded on-order inventory or reducing the amount of funds available for the Air Force Materiel Command by an amount up to the value of the Air Force's on-order inventory that is not needed to support requirements, the Air Force is likely to continue to experience its long-standing problems with having on-order inventory that is not needed to support requirements. In our discussions with Air Force Materiel Command officials, they disagreed with our assertion that they do not have incentives to assist them in reducing the amount of on-order inventory that is not needed to support requirements. According to an Air Force Materiel Management Command official, the Air Force has a plan to create a new data system to improve the process for identifying on-order inventory that should be terminated. However, this official stated that there is not yet a designated amount of funding in place to finance the initiative; thus it is unclear when this plan would be implemented.

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**With Higher Demands, Still More than Half of the Air Force's On-Hand Inventory Was Not Needed to Support Requirements**

Although higher demands helped the Air Force slightly reduce the percentage of its on-hand inventory not needed to support requirements during fiscal year 2002 through fiscal year 2005, more than half of its on-hand inventory was unneeded. Our analysis shows that between September 30, 2002, and September 30, 2005, the percentage of the Air Force's unneeded on-hand inventory was reduced by 2.7 percent, due, in part, to increases in the demand for the items, although the value of this unneeded inventory remained the same. Despite this reduction, an average of about 65 percent (\$18.7 billion) of the value of the Air Force's on-hand inventory was not needed to support requirements. Examples of unneeded on-hand inventory include jet engines, electrical and communication equipment, radar equipment, guided missile components and subsystems, aircraft gun fire control components, and other aircraft components. Table 3 shows the amount of unneeded inventory the Air Force had on hand from the end of fiscal year 2002 through the end of fiscal year 2005.

**Table 3: Air Force On-Hand Secondary Inventory Not Needed to Support Requirements from the End of Fiscal Year 2002 through the End of Fiscal Year 2005**

Dollars in billions

Fiscal year	Total value of on-hand inventory	Inventory not needed to support requirements		
		Number of items	Value	Percent of on-hand inventory
2005	\$29.4	5,776,442	\$18.7	63.6%
2004	30.2	6,323,311	19.4	64.2
2003	27.9	6,761,671	17.9	64.2
2002	28.2	7,511,932	18.7	66.3

Source: GAO analysis of Air Force data.

At the end of fiscal year 2005, the Air Force had 87,480 unique items (with a quantity of 5,776,442 individual parts) valued at \$18.7 billion with inventory on hand that was not needed to support requirements. Of these 87,480 items, there were 1,192 unique items (with a quantity of 775,791 individual parts) that had unneeded inventory both on order and on hand. These items represented approximately 4 percent, or about \$0.8 billion of the total \$18.7 billion of Air Force's on-hand items that were not needed to support requirements. Appendix III contains a list of the top 10 types of items, identified by the federal supply class, with the highest value of unneeded items as of September 30, 2005.

Having on-hand inventory that is not needed to support requirements increases overall storage costs for the Air Force. According to Air Force officials, the cost to store this inventory is small compared to the cost to dispose of and then later repurchase these items if they are needed. However, we calculated as of September 30, 2005, that it cost the Air Force at least \$15 million annually to store its useable inventory not needed to support on-hand requirements. In addition, depending on the location where repairable broken items are stored, it could cost up to an additional \$15 million to store unneeded inventory items that have not been repaired.<sup>10</sup> If the Air Force did not have this unneeded inventory, it might be in a better position to reduce its warehousing infrastructure and associated costs. Moreover, the \$18.7 billion in on-hand inventory not needed to support requirements indicates that the Air Force may not have

<sup>10</sup>We calculated this cost based on DLA storage rates. Useable assets are stored in warehouses managed by DLA, and items in need of repair may be stored at either DLA warehouses or Air Force repair facilities.

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canceled orders for items that were not needed or may have tied up funds that could have been obligated for other needed items.

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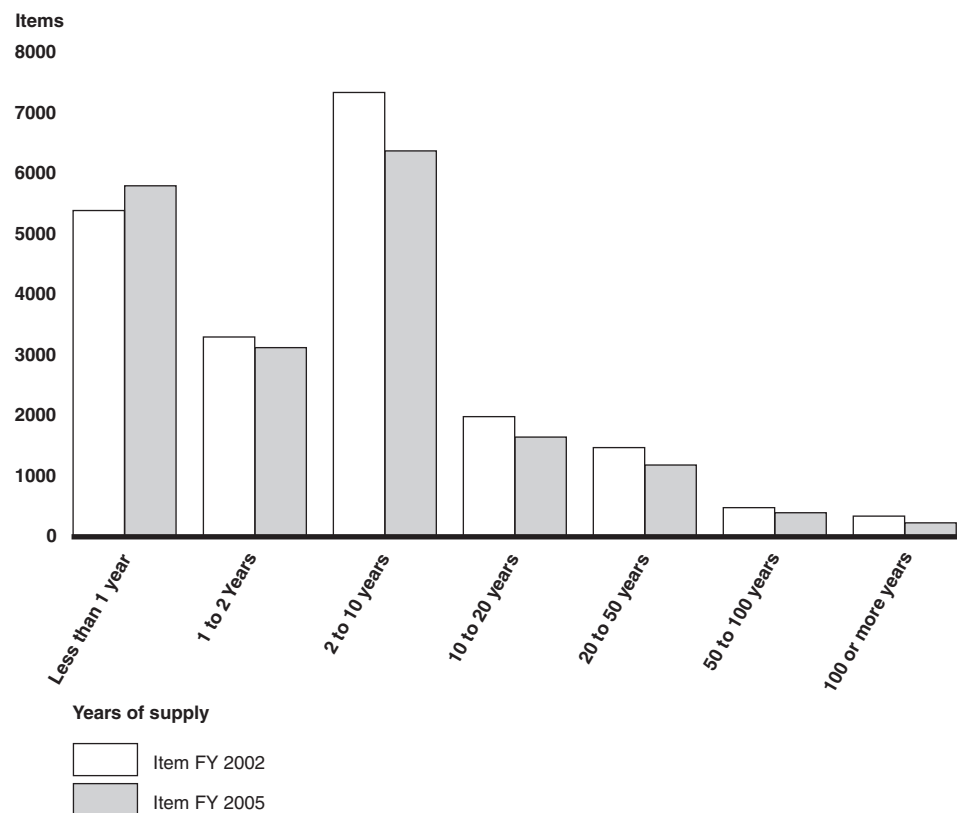
### Much of the Air Force Inventory Not Needed to Support Requirements Had No Demands, Although Demands for Some Items Increased

Of the Air Force's on-order and on-hand inventory not needed to support requirements, 79 percent had no recurring demands at all, resulting in a potentially infinite supply of those items. Examples of unneeded inventory with no recurring demands include jet engines, electrical hardware, guided missiles, fusing and firing devices, and airframe and other aircraft components. The Air Force has continued to retain this unneeded inventory with no recurring demands, in part, because the Air Force has not performed a comprehensive assessment of its on-hand inventory items that are not needed to support requirements and that have no recurring demands and revalidated the need to continue to retain these items. In our discussions with Air Force Materiel Command officials, they disagreed with our assertion that they should conduct a comprehensive assessment to determine whether to retain this unneeded inventory. According to an Air Force Materiel Command official, the Air Force's quarterly requirements computation process is a valid assessment for determining the amount of inventory needed to satisfy its requirements. However, this process does not provide a comprehensive assessment on whether to retain inventory items not needed to satisfy requirements. Instead, the requirements computation process determines the amount of inventory needed to be on hand and on order to satisfy current and future requirements and identifies the amount of inventory that is above those requirements. An Air Force Materiel Command official also stated that the Air Force provides item management specialists with the necessary guidance for retaining assets that are not needed to support requirements and it conducts an annual assessment of the inventory items that are being retained. The official commented that although these assets may show no current demands, there may be future demands for the items, thus the Air Force retains them for possible future use. However, given that we found that 79 percent of the Air Force's on-order and on-hand inventory not needed to satisfy its current requirements are items that have no recurring demands, resulting in a potentially infinite supply of those items, we continue to believe that a comprehensive assessment is needed to determine which and how many of these items should be retained.

For the 21 percent of Air Force inventory not needed to support requirements that had projected recurring demands, we found that the demand for these items slightly increased, thereby improving the likelihood that these items will be used. For example, in fiscal year 2005, 82 percent of the unneeded items with projected recurring demands were

projected to be used within a period of 10 years or less; whereas in fiscal year 2002, only 79 percent of the items were projected to be used. Figure 1 shows a comparison of the number of Air Force unneeded on-hand and on-order inventory items stratified by years of supply for fiscal years 2002 and 2005.

**Figure 1: Comparison of the Number of Items and Value of the Air Force's Inventory Not Needed to Support Requirements Stratified by Years of Supply for Fiscal Year 2002 and Fiscal Year 2005**



Source: GAO analysis of Air Force data.

On the basis of number of items and value, in fiscal year 2002 and fiscal year 2005 the largest category of Air Force secondary inventory not needed to support requirements was “2 to 10 years of supply.” At the end of fiscal year 2005, there were 6,361 unique items valued at about \$4.2 billion within this category. The value of the items was largest of all of the years-of-supply categories, representing about 32 percent of the total value of the supply years stratified. We also found that the amount of inventory in the most current years of supply improved from 2002 to 2005. In fiscal

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year 2005, about 31 percent of the items with projected recurring demands had an anticipated supply of less than 1 year. This is about a 4 percent increase from the percentage for fiscal year 2002, which was about 27 percent.

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### Reasons Vary for Air Force Maintaining On-Order and On-Hand Inventory Not Needed to Support Requirements

Responses from Air Force item management specialists and our analysis of the Air Force's inventory data identified a variety of reasons for maintaining on-order and on-hand inventory not needed to support current requirements, such as decreasing demands, retaining items used to support aging weapon systems that have diminishing sources of supply or are being phased out of service, retaining items to support new weapon systems, and not terminating eligible contracts for on-order items not needed to support requirements.

We conducted a survey of selected Air Force inventory items, which identified a variety of reasons for having items not needed to support their inventory requirements. Table 4 summarizes the estimated frequency of reasons for having unneeded on-order and on-hand inventory as reported in our survey results. Based on our sample, decreases in demands and changes in implementation schedules for inventory replacement were the most frequent reasons specifically cited for on-order inventory not needed to support requirements. Decreases in demand and weapon systems being phased out were the most frequent reasons identified for unneeded on-hand inventory. Specific examples and more detailed discussion of some of these reasons appear in the subsections that follow. For more details on our item selection and survey methodology, refer to appendix I.

**Table 4: Estimated Frequency of Reasons for Having On-Order and On-Hand Inventory Not Needed to Meet Requirements**

Reason	On order		On hand	
	Sample item count	Percentage estimate of items in population <sup>a</sup>	Sample item count	Percentage estimate of items in population <sup>a</sup>
Demand decreased, fluctuated, or did not materialize	32	29%	47	37%
Nonrecurring (additive) demand did not materialize	8	8	4	2
Higher assembly (component parts)/weapons system was phased out or reduced	2	1	17	18
Change in the implementation schedules for some Air Force inventory reduction/replacement programs	16	14	14	2
Item was replaced	5	4	10	7
Item became obsolete	1	1	10	10
Items scheduled for transfer to DLA or a contractor facility	7	7	1	<1
Minimum purchase quantity or minimum purchase value	4	3	2	2
Data errors	6	5	6	2
No reported excess	12	10	14	10
Other (reclamation gains, previously unreported assets, change in condemnation rates, insurance items, initial provisioning, etc.)	25	22	26	18
No response given	10	8	12	9

Source: Results of GAO survey for Air Force on-order and on-hand inventory in our sample.

Notes: Percentage estimates are based on a limited sample size and have a margin of error of at most plus or minus 10 percent at the 95 percent confidence level. Reasons are not mutually exclusive; therefore, percentages do not total to 100.

<sup>a</sup>These estimates are based on a stratified sample and while item counts may be the same, percentage estimates may vary due to weighting.

Many of these reasons are long-standing and systemic inventory management problems that we have identified in our prior reports. Since early 1990, when we began reporting on this issue, decreases in demand, obsolescence, and data input errors were some of the reasons given for DOD's excess inventory. Additionally, on the basis of our March 2007 report reviewing DOD's administrative and production lead time requirements, we found that inaccurate forecasting of these requirements led to early delivery of items valued at approximately \$2 billion—of which

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## Demand Decreasing or Not Materializing

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the Air Force represented \$0.3 billion—resulting in having additional inventory on hand that was not needed to support requirements.<sup>11</sup>

Based on our survey, we estimate that demand decreasing or not materializing at all account for 29 percent of items with on-order inventory not needed to support requirements and 37 percent of items that had on-hand inventory not needed to support requirements. We estimate that decreases in demand were a factor in at least \$0.97 billion of the unneeded on-hand Air Force inventory. Moreover, since 1997, DOD's data have shown that demand decreasing or not materializing at all were the primary reasons for having on-order and on-hand inventory not needed to support requirements. Demand includes both recurring and nonrecurring demands. A one-time event, such as the initial upgrading of selected parts of a weapon system, is considered to be a nonrecurring demand. In our 1997 report, a decrease in demand or demand not materializing was also the primary reason for DOD having unneeded on-order and on-hand inventory, representing 24 percent and 11 percent, respectively, for the items sampled. Similarly, in 2000, we reported that while DOD inventory managers made inventory purchases that were supported by requirements at the time they were contracted, subsequent requirement decreases resulted in the purchases being in excess of requirements.<sup>12</sup> During our analysis, Air Force officials acknowledged that they are aware that decreases in demand have resulted in having more inventory than is needed to support requirements; however, the Air Force has not evaluated why it continues to experience these decreases in demand or taken actions to mitigate the effect of these changes. Until the Air Force evaluates why it continues to have long-standing changes in demand, it will continue to have on-order and on-hand inventory that is not needed to support requirements, which may result in unnecessary increased storage costs and obligation of funds earlier than necessary. In addition, until the Air Force evaluates these decreases in demand, it will be unable to effectively take necessary management actions to reduce unneeded on-hand and on-order inventory.

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<sup>11</sup>GAO, *Defense Supply: Opportunities Exist to Improve the Management of DOD's Acquisition Lead Time for Spare Parts*, [GAO-07-282](#) (Washington, D.C.: Mar. 2, 2007).

<sup>12</sup>GAO, *Defense Inventory: Process for Canceling Inventory Orders Needs Improvement*, [GAO/NSIAD-00-160](#) (Washington, D.C.: June 30, 2000).

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Items Used to Support Aging  
Weapon System That Have  
Diminishing Sources of Supply  
or Are Being Phased Out of  
Service

Many of the Air Force's inventory items not needed to satisfy requirements are items used to support aging weapon systems that have diminishing sources of supply or are being phased out of service. Based on our sample, we estimate that 18 percent of unneeded on-hand inventory items are in this category. According to Air Force policy, items not needed to satisfy requirements may be retained by inventory management specialists if the items supporting older weapon systems can no longer be procured.<sup>13</sup> Additionally, DOD's Supply Chain Materiel Management Regulation states that the Air Force is required to review and validate, at least once annually, the methodology used in deciding to retain these items. In responding to our surveys, many item management specialists cited various Air Force memoranda that contain the justification for retaining items that support aging weapon systems, such as the B-52<sup>14</sup> and the A/OA-10.<sup>15</sup> For example, according to the retention memo for B-52 assets, the rationale for taking a conservative approach when disposing of excess inventory items is to counter routine difficulties in obtaining assets needed to meet requirements due to diminishing manufacturing sources and the increasing cost of reprocurring these items should demand arise after disposal of on-hand assets occurs. The projected life of the B-52 is expected to last until the year 2040. According to an Air Force memorandum, unless an item or system supporting the B-52 is replaced, most of these inventory items will be required at some point during the weapon system's projected life. Similar reasons were given for retaining the A-10 assets. However, item management officials for the A-10 have requested that all assets supporting this weapon system—many of which currently have little or no usage—be retained for the projected life of the weapon system, which is the year 2028. Based on our sample, we estimate that there is at least \$24 million worth of inventory on hand that supports the A-10 and the B-52 weapons systems. Although the actual usage rates may be small, given the length of time these systems will continue to be in service, without establishing some baseline requirements for the items supporting these systems, the Air Force will continue to have large quantities of inventory on hand that appear not to be needed to support requirements, even though the Air Force projects that these items may be needed in the future to support these weapon systems.

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<sup>13</sup>The *Air Force Materiel Command Manual 23-1, Requirements for Secondary Items (D200A, D200N)* (Jan. 5, 2007), prescribes guidance and procedural instructions for computing secondary item requirements.

<sup>14</sup> The B-52 is a long-range heavy combat bomber that can perform a variety of missions.

<sup>15</sup> The A/OA-10 is an aircraft designed for close air support of ground forces.



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Potential Support of New  
Weapon Systems by Current  
Items

The Air Force is retaining some inventory items because they potentially may be used to support new weapon systems. In June 2005, the Air Force Materiel Management Division directed that all parts for the F-16<sup>16</sup> aircraft weapon system be retained for a period of at least 1 year until the Air Combat Command completes an analysis of alternatives on the next generation replacement for the QF-4 aircraft weapon system.<sup>17</sup> In July 2006, this retention policy was extended until the analysis of alternatives is completed in 2007 and a decision is made. Currently, the F-16 is a leading candidate for replacing the QF-4 aircraft that will be phased out of service; thus, the future requirements for assets supporting the F-16 are unknown at this time. As a result, the Air Force is retaining all F-16 assets because they may be used to support the new weapon system. According to Air Force officials, they are using the lessons learned from the QF-4 program, where they had documented cases of repurchasing previously owned Air Force inventory from salvage contractors, usually at very high prices. Based on our sample, we estimate that 10 percent of items on hand that are not needed to meet current requirements are used to support the F-16 aircraft weapon system.

Contracts for On-Order Items  
Not Terminated

Some of the Air Force's on-order items not needed to support requirements remain on order because the contracts for these items have not been terminated. The Air Force defines items on order that are in excess of their requirements objective as termination quantities, which should be considered for contract cancellation under Air Force policy.<sup>18</sup> As of September 30, 2005, the Air Force had 789 unique items (about 115,000 individual parts), valued at about \$261 million, that should have been considered for contract termination. However, based on our sample, we estimate that only 5 percent of the contracts for items that should have

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<sup>16</sup>The F-16 is a compact, multirole fighter aircraft that is highly maneuverable and utilized in air-to-air combat and air-to-surface attack.

<sup>17</sup>The QF-4 is an F-4 fighter that has been converted into a drone to resemble enemy aircraft.

<sup>18</sup>The *Air Force Materiel Command Manual 23-1, Requirements for Secondary Items (D200A, D200N)* (Jan. 5, 2007), prescribes guidance and procedural instructions for computing secondary item requirements. Chapter 33 of this manual requires item management specialists to determine whether termination or reduction of the contract is economical for all items on order that are in excess of their requirements and are valued at \$5,000 or more, excluding complete aircraft or missile engines. According to Federal Acquisition Regulation (FAR), Subpart 49.101(C), when the price of the undelivered balance of the contract is less than \$5,000, the contract should not normally be terminated for convenience but should be permitted to run to completion.

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been considered for termination actually were terminated or reduced. Item management specialists reported that contracts were not cancelled or the quantity on contract was not reduced due to a variety of reasons that include: items were delivered before the termination quantities were identified, items were delivered before termination actions were taken, contract termination model results showed that it was not economically feasible to terminate contracts, items were purchased as government furnished equipment to support contractor repair, data errors resulted in inaccurately identifying contracts for termination, and manpower constraints resulted in the issuance of an interim policy directing that no contracts valued at \$1 million or less be terminated. For these items, we did not determine whether the Air Force ran the termination model in a timely manner to determine the feasibility of canceling the orders or bringing the items into inventory, nor did we determine whether the Air Force responded to the model's recommendations in a timely manner.

One frequent reason noted for lack of action to terminate or reduce a contract was an interim policy instituted from March 2005 through June 2006 at the Oklahoma City Air Logistics Center, directing that no termination actions be taken for items valued at \$1 million or less.<sup>19</sup> For these items, item management specialists also were not required to perform the contract cancellation computation to determine if it was economically feasible to terminate these contracts. According to Oklahoma City Air Logistics Center officials, this revised termination policy was instituted because of a decrease in the manpower needed to accurately and completely process these items with potential excess inventory due to mandatory training requirements. For the total number of items that we computed to be on-order inventory not needed to meet requirements as of September 30, 2005, this policy resulted in the acquisition of about 77 percent of the Oklahoma Air Logistics Center's inventory, valued at \$123 million, which was not supported by requirements.

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<sup>19</sup> Air Force Materiel Command, Oklahoma City Air Logistics Center, 448th Combat Sustainment Wing, *D200A Recoverable and Consumable Termination Policy Beginning Mar 05* (May 3, 2005), and *D200A Recoverable and Consumable On-order Excess, 30 Sep 05 Computation Cycles* (Jan. 23, 2006).

# Air Force Inventory Shortages Remained the Same

Although more than half of its secondary inventory was not needed to support requirements, the Air Force still had shortages of certain items in inventory. Between September 30, 2002, and September 30, 2005, the percentage and value of the Air Force’s inventory shortages remained the same—at about 8 percent and \$1.2 billion of its inventory required—while it maintained about \$20.0 billion for items on order and on hand that were not needed to support requirements. In fiscal year 2005, the Air Force experienced shortages of about \$1.2 billion for some 7,866 unique items (with a quantity of 371,961 individual parts), which may negatively affect readiness. Table 5 summarizes the value of the Air Force’s inventory shortages during this 4-year period.

**Table 5: Air Force Inventory Shortages from Fiscal Year 2002 through Fiscal Year 2005**

Dollars in billions				
Fiscal year	Value of total requirements	Shortages		
		Number of items	Value	Percent
2005	\$15.8	371,961	\$1.2	7.6%
2004	15.8	691,509	1.1	7.0
2003	14.6	356,977	0.9	6.2
2002	14.4	428,195	1.2	8.3

Source: GAO analysis of Air Force data.

The reasons cited by the Air Force item management specialists for their inventory shortages varied. Table 6 summarizes the estimated frequency of reasons for why these items did not meet overall inventory requirements. For more details on our item selection and survey methodology, see to appendix I.

**Table 6: Estimated Frequency of Reasons for Air Force Inventory Shortages**

Reasons	Sample item count	Percentage estimate of items in population <sup>a</sup>
Demand increased	1	1%
Nonrecurring (additive) demand increased	3	4
Minimum purchase quantity didn't meet requirements	1	1
Next higher assembly (component parts)/weapons systems are upgraded or new ones are added	3	2
Items are replaced with substitute items	3	2
Items are purchased on an annual basis	2	3
Lost or delayed repair capability	5	5
Data errors	4	6
No shortages reported	17	22
Other (initial provisioning, insurance items, change in condemnation rates, etc.)	25	24
No responses given	29	30

Source: Results of GAO survey for Air Force inventory shortages in our sample.

Notes: Percentage estimates are based on a limited sample size and have a margin of error of at most plus or minus 10 percent at the 95 percent confidence level. Reasons are not mutually exclusive; therefore, percentages do not total to 100.

<sup>a</sup>These estimates are based on a stratified sample and while item counts are the same, percentage estimates may vary due to weighting.

The most frequent reasons identified by item management specialists in the sample were “other” and “no shortages reported.” The specific reasons most frequently cited for shortages were lost or delayed repair capability, increases in demand, and data errors. For example, lost or delayed repair capability was a reason cited for a shortage with the fuel pump for a jet engine and with the electronic circuit card. Additionally, shortages for a transistor and a dual-level valve in fiscal year 2005 were attributed to increases in demand. In our previous work, we have similarly reported that increases in demand, the use of substitute items, and weapon systems upgrades or modifications have been reasons for inventory shortages.

## Conclusions

The nation faces an increasingly fiscally constrained environment where it is imperative that the Air Force exercise good stewardship over the billions of dollars invested in its inventory. At a time when the Air Force is making personnel reductions due to fiscal challenges, its ineffective and inefficient inventory management practices hinder its ability to efficiently

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and effectively allocate its resources. On average, from fiscal year 2002 through fiscal year 2005, the Air Force experienced shortages for some required items, valued at about \$1.2 billion, which may have negatively affected readiness. However, during this same period, the Air Force maintained about \$20 billion worth of items both on order and on hand that were not needed to support requirements. When the Air Force buys unneeded items, it is obligating funds unnecessarily, which could lead to not having sufficient funds to purchase needed items, which also may negatively affect readiness. Correcting these problems would make more funds available that could then be used to purchase items needed to reduce the Air Force's inventory shortages or meet other Air Force requirements. Without modifying its policies to provide incentives to reduce the amount of inventory on order that is not needed to support requirements or conducting a comprehensive assessment to validate the need to retain unneeded on-hand inventory that does not have recurring demands, the Air Force will continue its past practices of purchasing and retaining items that it does not need and then spending additional resources to handle and store these items. Absent establishing ongoing requirements for items to support weapon systems that have lengthy projected life spans, the spare parts used in these systems will appear to be unneeded even though the Air Force plans to retain these items and expects that these items will be needed over the life span of the system. Moreover, although inventory requirements change as a result of changes in the national threat levels and missions, continuing decreases in demand have caused more inventory to be on hand than is needed to support requirements. Until the Air Force evaluates why it continues to have long-standing decreases in demand, it will continue to maintain inventory that is not needed to support requirements, which may result in unnecessary increased storage costs.

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## Recommendations for Executive Action

To meet customer expectations while minimizing inventory and to reduce the Air Force's inventory not needed to support requirements, we are recommending that the Secretary of Defense direct the Secretary of the Air Force to take the following four actions:

- modify its policies to provide incentives to reduce purchases of on-order inventory that are not needed to support requirements, such as requiring contract termination review for all unneeded on-order inventory or reducing the funding available for the Air Force Materiel Command by an amount up to the value of the Air Force's on-order inventory that is not needed to support requirements;

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- conduct a comprehensive assessment of the inventory items on hand that are not needed to support requirements and that have no recurring demands and revalidate the need to continue to retain these items, and, as part of this assessment, consider establishing ongoing requirements for items supporting weapon systems that have lengthy projected life spans;
  - evaluate the reasons why the Air Force continually experiences decreases in demands which have contributed to having more than half of its inventory on hand not needed to support requirements; and
  - after evaluating the reasons for the decreases in demand, determine what actions are needed to address these decreases and then take steps to implement these actions.

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## Agency Comments and Our Evaluation

In written comments on a draft of this report (reprinted in app. IV), DOD concurred with three of our recommendations and partially concurred with one. DOD cited specific actions it plans to take to implement the four recommendations and specified implementation timelines for each recommendation. We do not believe that DOD's planned actions are fully responsive to two of our recommendations. Our evaluation of DOD's planned actions is discussed in detail below.

DOD partially concurred with our recommendation for the Air Force to modify its policies to provide incentives to reduce purchases of on-order inventory that are not needed to support requirements. While DOD agreed that opportunities exist to reduce Air Force on-order inventory by ensuring that on-order material above the reorder point is properly reviewed and that measures are put in place to ensure Air Force inventory management specialists are following excess on-order termination procedures, it did not agree that a change or modification to the Air Force's policy was required to accomplish this task, as we recommended. DOD said that the Air Force plans to address this issue by enforcing existing policy and by placing an increased focus on excess on-order measures. However, DOD did not explain these measures or what steps it will take to ensure that they are effectively implemented. DOD plans to provide a status update on the implementation of this recommendation by the end of September 2007. While we believe the actions cited by DOD are a step in the right direction, we do not believe that these planned actions are fully responsive to our recommendation. In this report we found that the Air Force has continued to not terminate contracts for unneeded on-order inventory because its policies do not provide incentives to reduce the amount of inventory on order that is not needed to support requirements. For example, as we stated in our report, in June 2006 the Air Force revised its policy for reviewing contract termination actions valued

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at \$1 million or less, which makes it easier to purchase inventory that is not needed to support requirements. This new policy requires each air logistics center to review at least 80 percent of the center's total computed termination value, with priority given to those terminations with the highest dollar value. Under its prior policy, all such orders were required to be reviewed for potential contract termination. As a result, this revised policy will require fewer on-order inventory items to be reviewed for potential contract termination. Given that we found more than half of the Air Force's on-order inventory was not needed to support on-order requirements at a time when the old policy requiring review of all orders was in effect, we believe that this new policy will exacerbate the problem. Thus, we continue to believe that the Air Force needs to modify its current policy to provide incentives to reduce purchases of on-order inventory as we recommended.

DOD concurred with our second recommendation to conduct a comprehensive assessment of unneeded on-hand inventory, stating that it agreed that opportunities exist to reduce Air Force on-hand inventory for items that are not needed to support requirements and have no recurring demands and that the need to continue to retain these items should be validated. DOD stated that the Air Force will review its current stockage retention policy and take actions necessary to reduce the inventory as required. DOD also stated that the Air Force will conduct annual reviews of all inventory items as directed by DOD's Supply Chain Management policy. DOD plans to provide a status update on the implementation of this recommendation by the end of September 2007. DOD also commented that no further guidance was needed. While we recognize that some of this inventory should be retained for economic or contingency reasons, we believe that added scrutiny should be applied to the Air Force's review of its stockage retention policy to ensure that it is not retaining assets that are not needed to support current and future operational needs. Based on our work, we believe that the Air Force has a tremendous potential for reducing its inventory because much of the inventory has no projected recurring demands, meaning that it is unlikely that this inventory will ever be used. In other cases, inventories may not be needed because many years of supply are on hand. DOD's planned actions are a step in the right direction; however, unless and until the Air Force makes appropriate adjustments to its inventory retention levels, there are no assurances that significant improvements will be made to reduce the Air Force's on-hand inventory not needed to support requirements.

In responding to our second recommendation, DOD did not address the portion of the recommendation directing the Air Force to consider

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establishing requirements for items that support weapon systems that have lengthy projected life spans. Without establishing requirements for items that the Air Force wants to retain for future use, it will be difficult to determine what portion of its inventory that is in excess of its requirements is valid to retain. For example, as stated in our report, many of the items supporting the A-10 and B-52 weapon systems have minimal usage rates, but they are being procured today to prevent difficulties in obtaining these assets in the future due to diminishing manufacturing sources. These weapon systems have projected life spans that could last until the year 2028 and 2040, respectively. Given the length of time these systems will continue to be in service, the Air Force needs to establish some baseline requirements for the items supporting these systems; otherwise, the Air Force will continue to have large quantities of inventory on hand that appear not to be needed to support requirements, even though these items may be needed in the future to support these weapon systems. Thus, we continue to believe that our recommendation is valid and DOD should consider establishing requirements for these items.

DOD concurred with our third recommendation to evaluate the reasons why the Air Force continually experiences decreases in demands, which have contributed to having more than half of its inventory on hand not needed to support requirements. DOD agreed that the Air Force experiences changes in demand levels and stated that these changes can be attributed to changes in Air Force missions, reliability and technology improvements, and modifications of inventory items. DOD stated that the Air Force plans to review the computation forecasting model and make any changes required to help ensure future requirements reflect actual demands. DOD plans to provide a status update on the implementation of this recommendation by the end of September 2007. We believe that these actions are generally responsive to our recommendation.

In responding to this recommendation, DOD also stated that our finding that more than half of the Air Force inventory on hand is not needed to support requirements is inaccurate. DOD has consistently disagreed with our definition of inventory not needed to support requirements because it differs from the definition that DOD uses for budgeting purposes. DOD policy identifies inventory not needed to support requirements based on current requirements and requirements that are projected through the end of a 2-year budget period.<sup>20</sup> For our work, we only analyzed the Air Force's

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<sup>20</sup>These requirements are identified in the Approved Acquisition Objective table of DOD's budget stratification report.



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inventory that is needed to support current requirements.<sup>21</sup> We do not believe that the projected requirements for the 2-year budget period should be considered in determining the amount of inventory needed to support current requirements. As stated in our report, if the Air Force did not have enough inventory on hand or on order to satisfy the projected requirements for the 2-year budget period, the requirements determination process would not result in additional inventory being purchased to satisfy these requirements. As a result, based on our analysis, we found that more than half of the Air Force's on-hand and on-order inventory is not needed to support requirements. We continue to believe that our characterization of the Air Force inventory is reasonable, because it reflects the amount of inventory needed to be on hand and on order to support current requirements.

Finally, DOD fully concurred with our fourth recommendation to determine what actions are needed to address the decreases in demand and then take steps to implement these actions. DOD stated that the Air Force incorporates requirement changes, resulting in decreased demands, into the computation forecasting model as soon as those changes are known. However, DOD acknowledged that the key is to define the changes soon enough to prevent or terminate buys which may not be needed. DOD stated that the Air Force will monitor the goals, actions, and deliverables as a part of the Air Force computation forecasting model review. DOD plans to provide a status update on the implementation of this recommendation by the end of September 2007. We believe these actions will adequately address our recommendation.

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We are sending copies of this report to interested congressional committees; the Secretary of Defense; the Secretary of the Air Force; the Director, Defense Logistics Agency; the Under Secretary of Defense for Acquisition, Technology, and Logistics; and the Director, Office of Management and Budget. We will also make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov/>.

If you or your staff have any questions concerning this report, please contact me on (202) 512-8365 or [solisw@gao.gov](mailto:solisw@gao.gov). Contact points for our

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<sup>21</sup>These requirements are identified in the Opening Position table of DOD's budget stratification report.

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Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix V.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'W. Solis', with a long horizontal flourish extending to the right.

William M. Solis  
Director, Defense Capabilities and Management

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*List of Congressional Committees*

The Honorable Carl Levin  
Chairman  
The Honorable John McCain  
Ranking Member  
Committee on Armed Services  
United States Senate

The Honorable Daniel Inouye  
Chairman  
The Honorable Ted Stevens  
Ranking Member  
Subcommittee on Defense  
Committee on Appropriations  
United States Senate

The Honorable Ike Skelton  
Chairman  
The Honorable Duncan Hunter  
Ranking Member  
Committee on Armed Services  
House of Representatives

The Honorable John P. Murtha  
Chairman  
The Honorable C.W. Bill Young  
Ranking Member  
Subcommittee on Defense  
Committee on Appropriations  
House of Representatives

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# Appendix I: Scope and Methodology

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To assess data used in this report, we obtained the Air Force's Central Secondary Item Stratification Budget Summary and item-specific reports for fiscal years 2002 through 2005. The stratification reports serve as a budget request preparation tool and a mechanism for military officials to review funding. Specifically, the Air Force uses this inventory stratification process to develop inventory budgets, show why inventory is held, and identify assets that are either on hand or on order as of the stratification date. Our analysis was based on evaluating the Air Force's item stratifications within the opening position table of the Central Secondary Item Stratification Reports.<sup>1</sup>

To validate the data in the budget stratification reports, we generated summary reports using electronic data and verified our totals against the summary stratification reports obtained from the Air Force. The Air Force secondary inventory data are identified by unique stock numbers for each spare part, such as an engine for a particular aircraft, which we refer to as unique items. The Air Force may have in its inventory multiple quantities of each unique item, which we refer to as individual parts. We calculated the value of each unique item by multiplying the quantity of the item's individual parts by the item's unit price, which is the latest acquisition cost for the item. We computed total values for all items collectively in the inventory and the stratification tables were recreated. This computation approach is consistent with the Department of Defense's (DOD) process for valuing assets in its annual Supply System Inventory Report. In cases where we found discrepancies in our dataset because of one or more items being reported in the stratification, we identified the excess item and removed it from the dataset. After assessing the Air Force data, we determined that the data were sufficiently reliable for the purposes of our analysis and findings.

Upon completion of the data validation process, we revalued the Air Force's secondary inventory items identified in its budget stratification summary reports because these reports value useable items and items in need of repair at the same rate, and do not take into account the repair cost for repairable broken items. We computed the new value for items in need of repair by subtracting repair costs from the unit price for each item. In cases where the repair cost was greater than the unit price, we obtained

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<sup>1</sup>The Opening Position table of the Air Force's Central Secondary Item Stratification Report shows current requirements as of a certain cutoff date and does not include any forecasted requirements or simulations.

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new calculations from the Air Force for revaluing these assets. To determine the causes for the \$1.2 billion increase in the Air Force's secondary item inventory levels between fiscal years 2002 and 2005, we analyzed the inventory to determine if the increase was due to changes in the inventory's value, changes in the quantity of items in inventory, new items added to the inventory, or obsolete items removed from the inventory.

We excluded requirements for administrative and production lead time from the Air Force's on-hand requirements. However, DOD's practice has always been to use administrative and production lead time requirements<sup>2</sup> to justify the amount of inventory it had on hand. We do not agree with this practice to use lead time requirements to justify on-hand inventory because based on DOD's material management regulations,<sup>3</sup> acquisition lead time quantities are not required to be on hand. Acquisition lead time is the sum of administrative and production lead times. However, we do agree with DOD that excess on-hand inventory should be used to offset or satisfy requirements for lead time because it would reduce the amount of inventory that needs to be on order.

In commenting on our past reports,<sup>4</sup> DOD and the Air Force have disagreed with our definition of inventory that was not needed to satisfy current operating requirements because it differs from the definition that

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<sup>2</sup>Administrative lead time is defined as the time interval between identification of a need to buy and the awarding of a contract or the placing of an order. Production lead time is defined as the time interval between the awarding of a contract or the placing of an order, and receipt into the supply system of materiel purchased.

<sup>3</sup>Office of the Deputy Under Secretary of Defense for Logistics and Materiel Readiness, *Department of Defense Supply Chain Materiel Management Regulation*, DOD 4140.1-R (May 2003).

<sup>4</sup>GAO, *Defense Inventory: More Accurate Reporting Categories Are Needed*, [GAO/NSIAD-93-31](#) (Washington, D.C.: Aug. 12, 1993); *Defense Inventory: Shortages Are Recurring, but Not a Problem*, [GAO/NSIAD-95-137](#) (Washington, D.C.: Aug. 7, 1995); and *Defense Logistics: Much of the Inventory Exceed Current Needs*, [GAO/NSIAD-97-71](#) (Washington, D.C.: Feb. 28, 1997).

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is used for the inventory budget process.<sup>5</sup> We consider the Air Force to have unneeded on-order or on-hand inventory if it has more inventory than is needed to satisfy its requirements based on the Opening Position table of the Air Force's budget stratification report. However, if the Air Force has more inventory on order or on hand than is needed to satisfy its requirements, it does not consider the inventory beyond the requirements to be unneeded. Instead, the Air Force uses the on-order inventory that is beyond its on-order requirements to satisfy future demands over a 2-year period and contingency retention requirements.<sup>6</sup> Similarly, when the Air Force has on-hand inventory that is beyond its on-hand requirements, it uses the inventory to satisfy future demands over a 2-year period, lead time requirements, economic retention requirements,<sup>7</sup> and contingency retention requirements. Only after applying inventory to satisfy these additional requirements would the Air Force consider that it has more inventory than is needed and would consider this inventory for potential reutilization or disposal.<sup>8</sup> We do not agree with the Air Force's practice of not identifying inventory used to satisfy these additional requirements as excess because it overstates the amount of inventory needed to be on hand or on order by billions of dollars. The Air Force's requirements determination process does not consider these additional requirements (except for on-hand inventory needed to meet lead time requirements) when it calculates the amount of inventory needed to be on hand or on order. If the Air Force did not have enough inventory on hand or on order to satisfy these additional requirements, the requirements determination process would not result in additional inventory being purchased to satisfy these requirements. Tables 7 and 8 show a comparison of our analysis and

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<sup>5</sup>Instead of using the Opening Position table of its stratification reports to determine current requirements in its budget process, the Air Force uses the Approved Force Acquisition Objective and Retention Position table of its stratification report to determine the amount of inventory it needs to satisfy current requirements plus 2 years of future demands and the amount of inventory it needs to retain for long supply (inventory beyond current requirements), including items identified for potential excess.

<sup>6</sup>Contingency retention inventory exceeds economic retention inventory (items that are more economical to keep than to dispose of) and would normally be processed for disposal but is retained for specific contingencies.

<sup>7</sup>Economic retention inventory includes items that have been determined to be more economical to keep than to dispose of because they are likely to be needed in the future. Economic retention inventory is not applied to on-order inventory not needed to satisfy requirements.

<sup>8</sup>Potential reutilization and/or disposal materiel exceeds contingency retention and has been identified for possible disposal but with potential for reutilization.

the Air Force's stratification results of how on-order and on-hand inventory for fiscal year 2005 is applied to satisfy requirements.

**Table 7: Comparison of GAO Analysis and Air Force Stratification Results for On-Order Inventory in Fiscal Year 2005**

Dollars in billions		
	GAO	Air Force
Inventory on order	\$2.3	\$2.3
On-order inventory applied to:		
Demands for a 2-year period	—	1.0
On-order requirements	1.2 <sup>a</sup>	1.0 <sup>b</sup>
Contingency retention requirements	—	0.0
On-order inventory not needed to satisfy requirements	1.1	0.3

Source: GAO analysis of Air Force budget stratification data.

<sup>a</sup>We define on-order requirements as requirements for war reserves, stock due-outs, safety levels, numeric stockage objective, repair cycle, production lead time, and administrative lead time. We used the opening position table of the Air Force's budget stratification report to compute the value of the inventory used to satisfy these requirements.

<sup>b</sup>The value of the inventory applied to the Air Force's on-order requirements is less than the value identified in our analysis due, in part, to the priority the Air Force places on the various requirements that comprise the on-order requirements identified in the Air Force budget stratification report. Specifically, because inventory items are applied to satisfy demands over a 2-year period before items are applied to meet the safety levels, numeric stockage objective, repair cycle, production lead time, and administrative lead time requirements, the value of the inventory applied to meet the Air Force's on-order requirements appears to be less than the value computed in our analysis. The Air Force uses its Approved Force Acquisition Objective and Retention Position table of its budget stratification report to determine the amount of inventory needed to satisfy its requirements; whereas in our analysis we used the Opening Position table of the stratification report.

**Table 8: Comparison of GAO Analysis and Air Force Stratification Results for On-Hand Inventory in Fiscal Year 2005**

Dollars in billions		
	GAO	Air Force
Inventory on hand	\$29.4 <sup>a</sup>	\$34.6
On-hand inventory applied to:		
Demands for a 2-year period	—	15.3
Lead time requirements	—	0.2
On-hand requirements	10.7 <sup>b</sup>	6.7 <sup>c</sup>
Economic retention requirements	—	3.6
Contingency retention requirements	—	6.1
On-hand inventory not needed to satisfy requirements	18.7	2.7

Source: GAO analysis of Air Force budget stratification data.

<sup>a</sup>In our analysis, the value of the Air Force's on-hand inventory is less than the value shown in the Air Force's budget stratification report because we revalued the Air Force's secondary inventory items to take into account the repair cost for broken repairable items. We computed the new value for items in need of repair by subtracting repair costs from the unit price for each item.

<sup>b</sup>We define on-hand requirements as requirements for war reserves, stock due-outs, safety levels, numeric stockage objective, and repair cycle. We used the Opening Position table of the Air Force's budget stratification report to compute the value of the inventory used to satisfy these requirements.

<sup>c</sup>The value of the inventory applied to the Air Force's on-hand requirements is significantly less than the value identified in our analysis due, in part, to the priority the Air Force places on the various requirements that comprise the on-hand requirements identified in the Air Force budget stratification report. Specifically, because inventory items are applied to satisfy demands over a 2-year period before items are applied to meet the safety levels, numeric stockage objective, and repair cycle requirements, the value of the inventory applied to meet the Air Force's on-hand requirements appears to be less than the value computed in our analysis. Unlike GAO, the Air Force uses its Approved Force Acquisition Objective and Retention Position table to determine the amount of inventory needed to satisfy its requirements.

To determine the extent to which the Air Force's on-order and on-hand secondary inventory reflects the amount of inventory needed to support requirements, we reviewed DOD and Air Force inventory management policies, past GAO products on DOD and Air Force inventory management practices for secondary inventory items, and other related documentation. We also compared the Air Force's current inventory to its current on-order and on-hand operating requirements and computed the amount and value of secondary inventory exceeding or not meeting current operating requirements. To determine the amount and value of the Air Force inventory not needed to support requirements and inventory shortages, we reviewed the Air Force's summary and item-specific budget stratification



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reports for fiscal years 2002 through 2005. We subdivided all items into one of four categories: (1) items that only had on-order inventory not needed to support requirements, (2) items that only had on-hand items not needed to support requirements, (3) items that had both on-order and on-hand items not needed to support requirements, or (4) items with inventory shortages. In computing the number and value of on-order items not needed to support requirements, we added the results from category one and the results from the on-order portion of category three to compute the total number of items and value of on-order items not needed to support requirements. Similarly, we added the results from category two and the results from the on-hand portion of category three to compute the total number of items and value of on-hand items not needed to support requirements.

Additionally, we calculated the storage costs of the inventory on hand that was not needed to meet requirements. We obtained the storage rates for the three different categories—covered, open, and special—of storage from the Defense Logistic Agency (DLA), which was where the inventory items were held.<sup>9</sup> Then we sent DLA officials a list of the Air Force inventory, and they identified the category of each item. To determine the storage rate, we created a database that calculated the number of items multiplied by the annual storage cost rate and multiplied by the volume per item. To distinguish between the categories of items, the storage rates for useable items and items in need of repair were calculated separately.

Additionally, to understand whether the inventory not needed to support requirements had improved in relation to its years of supply, we calculated the number of supply years a given item would have based on its present quantity and demand. To determine the years of supply, we computed the projected years of supply using the projected recurring demand data for items with on-hand and on-order inventory not needed to support requirements. In fiscal years 2002 and 2005, items with projected recurring demands represented about 21 percent of the items with on-order and on-hand inventory not needed to support requirements. The remaining 79 percent of these items had no projected recurring demands, which means that the potential years of supply is infinite.

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<sup>9</sup>Useable assets are stored at DLA and items in need of repair may be stored at DLA and/or Air Force maintenance facilities.

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We developed a survey to estimate the frequency of reasons why the Air Force maintained items in inventory that were not needed to support requirements or that did not meet requirements. In the survey, we referred to those items that were not needed to support requirements as “excess” and the items that did not meet requirements as “shortages.” The survey asked general questions about the higher assembly (component parts) and/or weapon systems that the items support, and whether the item is on the Air Force’s mission-critical items list (i.e., Air Force Readiness Driver Program). In addition, we asked survey respondents to identify the reason(s) for the excess or shortage. We provided potential reasons as responses from which they could select based on reasons identified in some of our prior work. Since the list was not exhaustive, we provided a response option of “other, please explain.” Finally, we asked that survey respondents provide copies of any implementation plans, schedules, and initiatives planned or in place to reduce excesses or improve shortages. In addition to an expert technical review of the questionnaire by an independent survey methodologist, we conducted in-depth pretests by item management specialists at the Cryptologic Systems Group located in San Antonio, Texas prior to deployment of the final survey instrument. We revised the questionnaire accordingly based on findings from the pretests.

We sent this survey electronically to specific item management specialists in charge of sampled unique items at the Air Force’s Air Logistic Centers. To estimate the frequency of reasons for inventory not needed to meet requirements and inventory shortages, we drew a stratified random probability sample of 335 unique items—230 of these with excess inventory and 105 with inventory shortages—from a study population of 18,676 items—10,810 with inventory not needed to meet requirements and 7,866 with inventory shortages. Based on our analysis of the Air Force stratification data, for fiscal year 2005, there were 88,445 unique items with inventory not needed to meet requirements valued at \$19.8 billion. Of these 88,445 items, 10,810 met our criteria to be included in our study population of items not needed to meet requirements. These items were valued at \$12.4 billion and represented 12 percent of total unique items and 63 percent of the total dollar value of items not needed to meet requirements. Additionally, based on our analysis of the stratification data, all of the 7,866 unique items with inventory shortages, valued at \$1.2 billion, met our criteria to be included in our shortage study population. We selected our sample of items not needed to meet requirements from six strata defined by the criteria described in table 9. Our shortage sample was selected from two strata defined by the criteria described in table 10. The divisions of the population, sample, and respondents across the strata, as well as response rate by stratum, are also shown in tables 9 and 10.

**Table 9: Sample Disposition for Fiscal Year 2005 Items Not Needed to Meet Requirements**

Dollars in millions

Stratum	Description	Total population	Value of on-hand population	Value of on-order population	Total sample size	Number of responses	Response rate by stratum
1	On-hand excess with unknown or 2 or more years of long supply and a dollar value of at least \$100,000, excluding those included in stratum 2	2,630	\$1,043.10	0	20	17	85%
2	On-hand excess with 10 or more years of long supply or quantity of 10 or more items	7,399	10,701.90	0	88	70	80
3	On-order excess with unknown or 2 or more years of long supply, excluding those included in stratum 4	136	0	\$0.4	15	15	100
4	On-order excess with 10 or more years of long supply or dollar value of at least \$10,000	320	0	268.2	50	45	90
5	Both on-hand and on-order excess with unknown or 2 or more years of long supply, excluding those included in stratum 6	47	0.1	0.06	6	6	100
6	Both on-hand and on-order excess with 10 or more years of long supply and total dollar value at least \$10,000	278	279.9	151.4	51	49	96
<b>Total</b>		<b>10,810</b>	<b>\$12,024.8</b>	<b>\$420.1</b>	<b>230</b>	<b>202</b>	<b>82%</b>

Source: GAO analysis of Air Force budget stratification data and survey responses.

**Table 10: Sample Disposition of Fiscal Year 2005 Inventory Shortages**

Dollars in millions

Stratum number	Stratum description	Total population size	Value of population items	Total sample size	Number of responses	Response rate by stratum
1	Shortage items, excluding those included in stratum 2	3,891	\$10.0	31	27	87%
2	Shortage items with either 10 or more items or total dollar value of \$10,000	3,975	1,238.8	74	66	89
<b>Total</b>		<b>7,866</b>	<b>\$1,248.8</b>	<b>105</b>	<b>93</b>	<b>88%</b>

Source: GAO analysis of Air Force budget stratification data and survey responses.

We sent 335 electronic surveys—one survey for each item in the sample—to the 230 Air Force item management specialists identified as being responsible for these items. Ultimately, we received 295 responses for the survey, for adjusted response rates of 82 percent for excess items and 88 percent for shortage items. Each sampled item was subsequently weighted in the final analysis to represent all the members of the target population.

Because we followed a probability procedure based on random selections, our sample of unique items is only one of a large number of samples that we might have drawn. Because each sample could have provided different estimates, we express our confidence in the precision of our particular sample's results in 95 percent confidence intervals. These are intervals that would contain the actual population values for 95 percent of the samples we could have drawn. As a result, we are 95 percent confident that each of the confidence intervals in this report will include the true values in the study population. All percentage estimates from our sample have margins of error (that is, widths of confidence intervals) of plus or minus 10 percentage points or less, at the 95 percent confidence level unless otherwise noted.

In addition to sampling errors, the practical difficulties of conducting any survey may introduce errors, commonly referred to as nonsampling errors. For example, difficulties in how a particular question is interpreted, in the sources of information that are available to respondents, or in how the data are entered into a database or were analyzed can introduce unwanted variability into the survey results. We took steps in the development of the questionnaire, the data collection, and the data analysis to minimize these nonsampling errors. For example, data were collected electronically and exported for analyses, negating data entry error. We also reviewed each

survey to identify unusual, incomplete, or inconsistent responses and followed up with item management specialists by telephone to clarify those responses. In addition, we performed computer analyses to identify inconsistencies and other indicators of errors and had a second independent reviewer for the data analysis to further minimize such error.

On the basis of information obtained from the Air Force on the reliability of its inventory management systems' data, and the survey results and our follow-up analysis, we believe that the data used in this report were sufficiently reliable for reporting purposes.

In addition to meeting with Air Force officials at the Air Force Materiel Command in Dayton, Ohio, we conducted telephone interviews and e-mailed correspondence to inventory management officials from the three Air Force Air Logistics Centers located in Macon, Georgia; Ogden, Utah; and Oklahoma City, Oklahoma; and the Cryptologic Systems Group located in San Antonio, Texas to obtain answers to these questions. We conducted our work between January 2006 and February 2007 in accordance with generally accepted government auditing standards.

# Appendix II: Top 10 Types of Air Force On-Order Inventory That Were Not Needed to Support Requirements

**Table 11: Top 10 Types of Air Force On-Order Inventory Identified by Federal Supply Class That Were Not Needed to Support Requirements as of September 30, 2005**

Dollars in billions

<b>Federal supply class</b>	<b>Federal supply class description</b>	<b>Number of items by federal supply class</b>	<b>Number of items in on-order excess</b>	<b>Total value of on-order excess inventory</b>
2840	Gas Turbines and Jet Engines, Aircraft & Comps	3,087	341	\$0.5
1560	Airframe Structural Components	6,875	288	0.2
1630	Aircraft Wheel and Brake Systems	570	42	0.03
1620	Aircraft Landing Gear Components	1,244	161	0.03
1680	Miscellaneous Aircraft Accessories and Components	1,918	102	0.02
1650	Aircraft Hydraulic, Vacuum & De-icing Sys Comp	1,650	91	0.02
5985	Antennas, Waveguides & Related Equipment	2,626	27	0.02
5998	Electrical & Electric Boards, Cards & Associated Hardware	41,526	94	0.02
1420	Guided Missile Components	786	3	0.02
5895	Miscellaneous Communication Equipment	4,731	23	0.02

Source: GAO analysis of Air Force data.

# Appendix III: Top 10 Types of Air Force On-Hand Inventory That Were Not Needed to Support Requirements

**Table 12: Top 10 Types of Air Force On-Hand Inventory Identified by Federal Supply Class That Were Not Needed to Support Requirements as of September 30, 2005**

Dollars in billions

Federal supply class	Federal supply class description	Number of items by federal supply class	Number of items in on-Hand excess	Total value of on-hand excess inventory
2840	Gas Turbines and Jet Engines, Aircraft & Components	3,087	1,880	\$2.4
1560	Airframe Structural Components	6,875	4,163	\$1.6
5998	Electrical & Electric Boards, Cards & Associated Hardware	41,526	28,777	\$1.2
5865	Electric Countermeasures & Quick Reaction Capability Equipment	669	394	\$1.0
5841	Radar Equipment, Airborne	977	695	\$0.8
5895	Miscellaneous Communication Equipment	4,731	2,750	\$0.8
1420	Guided Missile Components	786	456	\$0.7
1135	Fusing and Firing Devices, Nuclear Ordnance	583	460	\$0.7
1270	Aircraft Gunnery Fire Control Components	573	353	\$0.6
1427	Guided Missile Subsystems	32	24	\$0.6

Source: GAO analysis of Air Force data.

# Appendix IV: Comments from the Department of Defense



DEPUTY UNDER SECRETARY OF DEFENSE FOR  
LOGISTICS AND MATERIEL READINESS  
3500 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3500

April 10, 2007

Mr. William Solis  
Director, Defense Capabilities and Management  
U.S. Government Accountability Office  
441 G. Street, N.W.  
Washington, DC 20548

Dear Mr. Solis:

This is the Department of Defense (DoD) response to the GAO draft report GAO-07-232 "DEFENSE INVENTORY: Opportunities Exist to Save Billions by Reducing Air Force's Unneeded Spare Parts Inventory," dated February 22, 2007 (GAO Code 350798). The GAO draft report recommends that the Air Force conduct a review of its current inventory levels in excess of requirements and determine what causes variability in forecasted requirements between order and receipt of material. The DoD partially concurs with recommendation 1 and concurs with comment with recommendations 2, 3, and 4 in the report.

Detailed comments on the draft report recommendations are included in the enclosure. The DoD appreciates the opportunity to comment on the draft report.

  
Jack Bell

Enclosure:  
As stated





GAO DRAFT REPORT – DATED FEBRUARY 22, 2007  
GAO CODE 350798/GAO-07-232

“DEFENSE INVENTORY: Opportunities Exist to Save Billions by Reducing Air Force’s  
Unneeded Spare Parts Inventory,”

DEPARTMENT OF DEFENSE COMMENTS  
TO THE RECOMMENDATIONS

**RECOMMENDATION 1:** The GAO recommended that the Secretary of Defense direct the Secretary of the Air Force to modify its policies to provide incentives to reduce purchases of on-order inventory that are not needed to support requirements, such as requiring contract termination review for all unneeded on-order inventory or reducing the funding available for the Air Force Materiel Command by an amount up to the value of the Air Force’s on-order inventory that is not needed to support requirements. (page 32/Draft Report)

**DOD RESPONSE:** Partially concur. The DoD agrees that opportunities exist to reduce Air Force (AF) on-order inventory by ensuring that on-order material above the reorder point is properly reviewed and that measures are put in place to ensure AF Inventory Managers (IM) are following excess on-order termination procedures. The DoD does not agree that an AF policy change is required. The AF will address this issue by enforcing existing policy and by placing an increased focus on excess on-order measures. A status update will be provided at the end of September 2007. No further direction is required.

**RECOMMENDATION 2:** The GAO recommended that the Secretary of Defense direct the Secretary of the Air Force to conduct a comprehensive assessment of the inventory items on hand that are not needed to support requirements and that have no recurring demands and revalidate the need to continue to retain these items, and as part of this assessment consider establishing ongoing requirements for items supporting weapon systems that have lengthy projected life spans. (page 32/Draft Report)

**DOD RESPONSE:** Concur with comment. The DoD agrees that opportunities exist to reduce AF on-hand inventory for items that are not needed to support requirements and have no recurring demands and that the need to continue to retain these items should be validated. The AF will review the current stockage retention policy and take actions necessary to reduce the inventory as required. Current policy requires a thorough review of all inventory items at least once per year. The AF will conduct reviews annually as directed by current policy. A status update will be provided at the end of September 2007. No further direction is required.

**RECOMMENDATION 3:** The GAO recommended that the Secretary of Defense direct the Secretary of the Air Force to evaluate the reasons why the Air Force continually experiences decreases in demands which have contributed to having more than half of its inventory on hand not needed to support requirements; and (page 32/Draft Report)

**DOD RESPONSE:** Concur with comment. The AF analyzed the items with no recurring demand cited by GAO and found that they constitute less than 17% of the total inventory dollar

value, and less than 20% of the inventory's assets. The recommendation is inaccurate in stating that more than half of AF inventory on hand is not needed to support requirements. As GAO acknowledged in this report, the GAO definition of inventory not needed does not agree with the DoD definition of inventory not needed. GAO bases their findings on the Opening Position inventory or current requirements, while DOD policy identifies inventory not needed based on the Approved Acquisition Objective Position, which includes requirements through the budget period. The Opening Position does not include the full war reserve requirements and only includes today's requirements without considering inventory needed for requirements through the budget period.

The AF does experience changes in demand levels attributable to reasons such as a change in AF missions, reliability/technology improvements, and modifications. The AF will review the computation forecasting model and make any changes required to help ensure future requirements reflect actual demands. A status update will be provided at the end of September 2007. No further direction is required.

**RECOMMENDATION 4:** The GAO recommended that the Secretary of Defense direct the Secretary of the Air Force to determine what actions are needed and then take steps to address these changes in demand, after evaluating the reasons for the decrease in demand. (pages 32-33/Draft Report)

**DOD RESPONSE:** Concur with comment. The AF incorporates requirement changes, resulting in decreased demands, into the computation as soon as those changes are known. The key is to define the changes soon enough to prevent or terminate buys which may not be needed. The goals, actions, and deliverables will be monitored as a part of the AF computation forecasting model review. A status update will be provided at the end of September 2007. No further direction is required.

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# Appendix V: GAO Contact and Staff Acknowledgments

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## GAO Contact

William M. Solis, (202) 512-8365 or [solisw@gao.gov](mailto:solisw@gao.gov)

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## Acknowledgments

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